

A Catalogue of Hermit-crabs found in Japan (Paguridea excluding Lithodidae), with Descriptions of Four New Species.

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With 4 textfigures.

In the present catalogue are listed 68 species of hermit-crabs so far known from Japan. They are referable to 15 genera. Of the above number of species, four seem to me to be new to science and are here described for the first time, viz., *Parapagurus ijimai*, *Pagurus watasei*, *Eupagurus gotoi*, and *Diogenes nitidimanus*. Of the genera given in this paper, *Parapagurus* is taken in the broad sense of including *Sympagurus* Smith under it.

In my studies of the group I have had at disposal the entire collection in the Zoological Institute of the Science College, Tokyo Imp. Univ. For the facilities and useful advices given me in that Institute, it is my pleasant duty herewith to return my cordial thanks to Professors Ijima, Watasé and Gotô. My thanks are also due to several other gentlemen who have assisted me in obtaining materials from different parts of the country. I am under special obligation to Professor S. Ikeda of the High School of Kagoshima, by whose intermediation I have been able to examine not only the collection of that school but also the specimens belonging to some other public institutions of that city.

Family **Paguridae** Dana.

Paguridæ, Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 435 ; Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 232 ; Henderson, Challenger Anomura, 1888, p. 52 ; Stebbing, Hist. Crust., 1893, p. 159 ; Ortmann, in Bronn's Thierreich, Malacostraca, p. 1145 ; (pars), Milne-Edwards et Bouvier, Crust. Decap. Hirondelle et Princesse Alice, Monaco, 1899, p. 51 ; Alcock, Cat. Ind. Deep Sea Crust., 1901, p. 215 ; and Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 21.

Paguroidæ (pars), Boas, (Vidensk. Selsk. Skr., 6 Raekke, naturvid. og math., Afd. I. 2, 1880, p. 189).

Parapaguridæ, Smith, Bull. Mus. Comp. Zool., Harvard, x., 1883, p. 20 ; Henderson, Challenger Anomura, 1888, p. 85 ; Stebbing, Hist. Crust., 1893, p. 166.

Genus *Aniculus* Dana.

Aniculus, Dana, U. S. Expl. Exp., Crust., pt. 1., 1852, p. 460 ; Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 234 ; and Smiths. Misc. Coll., XLIX., 1907, p. 207 ; Miers, Cat. Crust. New Zealand, 1876, p. 64 ; Ortmann, Zool. Jahrb., Syst., vi, 1892, p. 276 ; Stebbing, Hist. Crust., 1883, p. 60 ; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 94.

Aniculus aniculus (Fabricius).

Pagurus aniculus, Fabricius, (Ent. Syst., II, 1793, p. 468) ; Milne-Edwards, Hist. Nat. Crust., II, 1837, p. 230.

Cancer aniculus, Herbst, (Krabben, II, 1794, p. 37).

Pagurus ursus, Olivier, (Encycl. Méthod., VIII, 1811, p. 640).

Aniculus typicus, Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 461, pl. xxix, fig. 1 ; Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 247 ; and Smiths. Misc. Coll., XLIX, 1908, p. 207 ; Heller, Novara Crust., 1865, p. 87 ; Miers, Cat. Crust. N. Z., 1876, p. 64 ; and Ann. Mag. Nat. Hist., ser. 5, v, 1880, p. 375 ; Ortmann, Zool. Jahrb., Syst.,

VI, 1892, p. 289; Whitelegge, Mem. Austral. Mus., III, 1897, p. 144; Borradaile, P. Z. S., 1898, p. 461.

Aniculus aniculus, Hilgendorf, in v. d. Decken's Reisen Ost-Afr., III, i, 1869, p. 97; Henderson, Tr. Linn. Soc., Zool., ser. 2, v, 1893, p. 422; Lanchester, P. Z. S., 1902, II, p. 364; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 94, pl. vii., fig. 6.

Note: Common near Misaki. A female specimen from the Nagasaki Prefecture in the Sci. Coll. Mus.

Genus *Calcinus* Dana.

Calcinus, Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 456; Stimpson, Proc. Acad. Nat. Sci., Philad., 1858, p. 234; and Smith. Misc. Coll., XLIX, 1907, p. 207; Henderson, Challenger Anomura, 1888, p. 61; Chevreux et Bouvier, Mém. Soc. Zool. France, 1892, p. 126; Ortmann, in Bronn's Thierreich, Malacostraca, p. 1146; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 51.

Calcinus elegans (Milne-Edwards).

Pagurus elegans, Milne-Edwards, (Ann. Sci. Nat., Zool., 2 e ser., VI, 1836, p. 278, pl. xiii, fig. 2); and Hist. Nat. Crust., II, 1837, p. 229; Krauss, Südafr. Crust., 1843, p. 57.

Calcinus elegans, Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 458, pl. xxviii, fig. 10 a-c; Stimpson, Proc. Acad. Nat. Sci., Philad., 1858; p. 247; and Smiths. Misc. Coll., XLIX, 1907, p. 208; Heller, Novara Crust., 1865, p. 88; Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 294; Whitelegge, Mem. Austral. Mus., III, 1897, p. 143; Borradaile, P. Z. S., 1898, p. 461; Lenz, Zool. Jahrb., Syst., XIV, 1901, p. 444; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 53, pl. v, fig. 2.

Pagurus pictus, Owen, (Zool. H. M. S. Blossom, 1839, Crust., p. 83, pl. xxv, fig. 2).

Pagurus decorus, Randall, (Journ. Acad. Philad., 1839, p. 134).

Note: A male specimen in the collection of the Kagoshima I. Middle School, from Miyano-ura in Yakushima, Prov. Ōsumi.

Calcinus gaimardi (Milne-Edwards).

Pagurus gaimardi, Milne-Edwards, Ann. Sci. Nat., 3 e sér., 1, 1848, p. 63.

Calcinus gaimardi, Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 457, pl. xxviii, fig. 9; Heller, Novara Crust., 1865, p. 87; Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 294; Borradaile, P. Z. S., 1898, p. 462; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 59, pl. v, fig. 3.

Note: I have not been able to examine this species.

Calcinus lævimanus (Randall).

Pagurus lævimanus, Randall; (Journ. Acad. Sci., Philad., VIII, 1839, p. 135).

Pagurus tibicen, Krauss, Südafr. Crust., 1843, p. 57; Milne-Edwards, Hist. Nat. Crust., II, 1837, p. 229.

Calcinus tibicen, Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 457; Stimpson, Proc. Acad. Nat. Sci., Philad., 1858, p. 247; and Smiths. Misc. Coll., XLIX, 1907, p. 208; Heller, Novara Crust., 1865, p. 87; Hilgendorf, in v. d. Decken's Reisen Ost-Afr., III, i, 1869, p. 97; Miers, Zool. H. M. S. "Alert," 1884, pp. 519, 557; Henderson, Challenger Anomura, 1888, p. 61; Whitelegge, Mem. Austral. Mus., III, 1897, p. 144.

Calcinus herbstii, de Man, Arch. f. Nat., LIII, 1887, I, p. 437; Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 292; Borradaile P. Z. S., 1898, p. 462; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 53, pl. v, fig. 4.

Calcinus lævimanus, Rathbun, Smiths. Misc. Coll., XLIX, 1907, p. 208, footnote correction of Stimpson's "*Calcinus tibicen* (Herbst) Dana"; Stebbing, Ann. S. Afr. Mus., VI, pt. iv, 1910, p. 353.

Note: Preserved in the Sci. Coll. Mus. are: a male from Nase, Amami-Ôshima, Prov. Ôsumi; two females and one male from Naha, Okinawa, Loo Choo; and a male from Kôshun, Formosa.

Calcinus latens (Randall).

Pagurus latens, Randall, (Journ. Acad. Nat. Sci., Philad., 1839, p. 135).

Calcinus latens, Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 459, pl. xxviii, fig. 11; Stimpson, Proc. Acad. Nat. Sci., Philad., 1858, p. 247; and Smith, Misc. Coll., XLIX, 1907, p. 208; Heller, Novara Crust., 1865, p. 88; Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 293; Whitelegge, Mem. Austral. Mus., III, 1897, p. 143; Borradaile, P. Z. S., 1898, p. 463; Lenz, Zool. Jahrb., Syst., XIV, 1901, p. 443; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 58, pl. v, fig. 5; Grant, Proc. Linn. Soc. N. S. Wales, 1906, pt. 1, p. 34.

Calcinus intermedius, de Man, (Notes Leyden Mus., III, 1881, p. 102).

Calcinus terræ-reginæ, Haswell, (Proc. Linn. Soc. N. S. Wales, VI, 1881-82, p. 760); de Man, Arch. f. Nat., LIII, i, 1887, p. 439; Journ. Linn. Soc., Zool., XXII, 1888, p. 226; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 57, pl. v, fig. 7.

Note: The Sci. Coll. Mus. contains a male specimen from Naha, Okinawa, Loo Choo, which seems to show much more resemblance to *C. terræ-reginæ* than to typical *C. latens*.

Genus *Catapagurus* Milne-Edwards.

Catapagurus, Milne-Edwards, Bull. Mus. Comp. Zool. Harvard, VIII, 1880, p. 46; Smith, Bull. Mus. Comp. Zool. Harvard, X, 1882, p. 14; Henderson, Challenger Anomura, 1888, p. 75; Milne-Edwards et Bouvier, Mem. Mus. Comp. Zool. Harvard, XIV, no. 3, 1893, p. 125; Stebbing, Hist. Crust., 1893, p. 165; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 114.

Hemipagurus, Smith, Ann. Mag. Nat. Hist., ser. 5, VII, 1881, p. 143.

Catapagurus doederleini Doflein.

Catapagurus doederleini, Doflein, Abh. d. k. bayer. Akad. d. Wiss., Cl. II, Bd. XXI, Abh. III, 1902, p. 624, taf. vi, fig. 4 et 5.

Note: No specimen has come under my examination.

Genus *Clibanarius* Dana.

Clibanarius Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 461; Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 234; and Smiths. Misc. Coll., XLIX, 1907, p. 208; Miers, Crust. N. Zealand, 1876, p. 67; Henderson, Challenger Anomura, 1888, p. 60; Milne-Edwards et Bouvier, Mem. Mus. Comp. Zool., Harvard, XIV, 3, 1893, p. 156; Stebbing, Hist. Crust., 1893, p. 160; Ortmann, in Bronn's Thierreich, Malacostraca, p. 1146; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 40.

Clibanarius bimaculatus (de Haan).

Pagurus bimaculatus, de Haan, Faun. Japon., Crust., 1849, p. 210, tab. 49, fig. 7, tab. 50, fig. 4.

Clibanarius bimaculatus, Ortmann, Zool. Jahrb., Syst., VI, 1892 pp. 290, 291.

Note: A male from Kataura, Prov. Satsuma, in the Sci. Coll. Mus. A striking difference between de Haan's original description and that specimen lies in the relative size of the chelipeds. From an examination of males, de Haan put down "pede antico sinistro in maribus majore," whereas in the single male specimen on hand the *right* cheliped is slightly more massive than the *left*. Longitudinal groove not present on dactyli of ambulatory legs, a negative character utilized by Ortmann for one of the points by which this species may be distinguished from *Cl. misanthropus*. Of the two figures given by de Haan, the one (tab. 50, fig. 4) well represents the species; the other (tab. 49, fig. 7) is not at all referred to in the descriptive text and differs much from the figure just mentioned but greatly resembles *Eupagurus samuelis* Stimpson in general appearance.

Clibanarius corallinus (Milne-Edwards).

Pagurus corallinus, Milne-Edwards, (Ann. Sci. Nat., Zool., 3e sér., x, 1848, p. 63).

Pagurus globosomanus, Dana, (Proc. Acad. Nat. Sci. Philad., 1851, p. 271).

Clibanarius globosimanus, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 247.

Clibanarius obesomanus (?*corallinus*), Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 468, pl. xxix, fig. 8a-c.

Clibanarius corallinus, Heller, Novara Crust., 1865, p. 89; de Man, Arch. f. Nat., LIII, 1887, 1, p. 447; Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 292; Borradaile, P. Z. S., 1898, p. 463; Lanchester, P. Z. S., 1902, II, p. 365; Alcock, Cat., Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 48, pl. v, fig. 1.

Clibanarius globosomanus, Stimpson, Smiths. Misc. Coll., XLIX, 1907, p. 210.

Note: A male specimen from Nakanoshima, Kagoshima Prefecture, in the collection of the 7th High School (Kagoshima city).

Clibanarius japonicus Rathbun.

Clibanarius japonicus, Rathbun, Proc. U. S. Nat. Mus., 1903, p. 35, fig. 2-5.

Note: This species and the following three have not come under my examination.

Clibanarius longitarsis (de Haan).

Pagurus longitarsis, de Haan, Faun. Jap., Crust., 1849, p. 211, pl. i, fig. 3.

Clibanarius longitarsis, Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 464; Stimpson, Proc. Acad. Nat. Sci. Philad. 1858, p. 247; and Smiths. Misc. Coll., XLIX, 1907, p. 209; Heller, Novara Crust., 1865, p. 90; Hilgendorf, in v. d. Decken's Reisen Ost-Afr., III, i, 1869, p. 96; Ortmann, in Semon's Zool. Forschungsr., Crust., 1894, p. 31; Lanchester, P. Z. S., 1902, II, p. 365.

Clibanarius pacificus Stimpson.

Clibanarius pacificus, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 246; and Smiths. Misc. Coll., XLIX, 1907, p. 211.

Clibanarius striolatus Dana.

Clibanarius striolatus, Dana, U. S. Expl. Exp., Crust., pt. 1, p. 463, pl. xxix, fig. 3 a-e; Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, pl. 247; Heller, Novara Crust., 1865, p. 89; de Man, Arch. f. Nat., LIII, i, 1887, p. 445; Ortmann, Zool. Jahrb, Syst., vi, 1892, p. 290; Lanchester, P. Z. S., 1902, p. 365; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 46, pl. iv, fig. 7.

Genus *Diogenes* Dana.

Diogenes, Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 438; Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 232; and Smiths. Misc. Coll., XLIX, 1907, p. 201; Henderson, Challenger Anomura, 1888, p. 53; Stebbing, Hist. Crust., 1893, p. 160; Ortmann, in Bronn's Thierreich, Malacostraca, p. 1146; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 59.

Diogenes edwardsii (de Haan).

Pagurus edwardsii, de Haan, Faun. Japon., Crust., 1849, p. 211 tab. 50, fig. 1.

Diogenes edwardsii, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 246; and Smiths. Misc. Coll., XLIX, 1907, p. 202, pl. xxiv, fig. 1; Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 295.

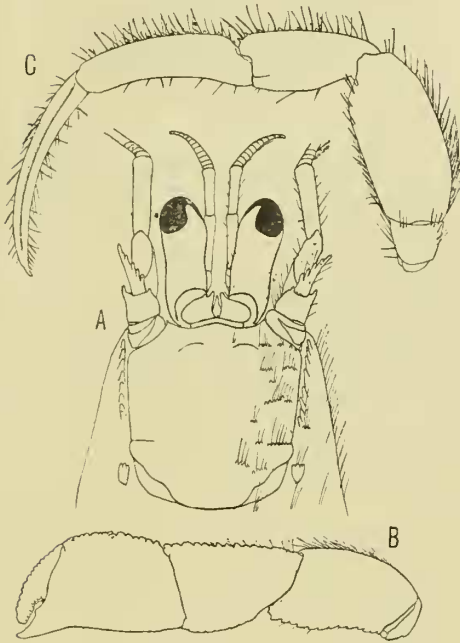
Note: A male specimen in Mr. M. Nakamura's collection made in the Niigata Prefecture. In the Sci. Coll. Mus. there are: a male from the Nagasaki Prefecture; two males and two females from Tomo-no-tsu, Prov. Bingo; a male from the Yamaguchi Prefecture; a male from Prov. Kii; several specimens from Kominato, Prov. Awa; and two males from an unknown locality.

The smaller individuals agree in the shape and granulation of left cheliped and in the relative length of eyestalks with *D. spinifrons* (de Haan), a form which was regarded by Ortmann to be the young of this species; while in other important characters, f. i., in the spinulose antennal acicles and in the setose dactyli of crawling legs, they tally completely with the description given by de Haan of *Pagurus edwardsii*.

Diogenes nitidimanus, n. sp.

(Textfig. 1).

Carapace depressed, broadened posteriorly, well-calcified in front of cervical groove, with several transversely or obliquely directed,



Textfig. 1.

Diogenes nitidimanus, n. sp. A, anterior half of carapace, $\times 8$; B, left cheliped, $\times 6$; C, 3rd left leg, $\times 7$.

close series of setose granules in antero-lateral regions; on each side a longitudinal row of teeth, running for nearly two-thirds the length of carapace in front of cervical groove. A short way posteriorly from the hind end of the teeth row, there is a small well-calcified areolet which is anteriorly spinulose. Rostrum broad, almost rounded off and indistinct, less prominent than antero-lateral teeth of the anterior border of carapace.

Eyestalks very stout, slightly narrowed in the middle, shorter than the anterior border of carapace, reaching to middle of the last joint of both antennular and antennal peduncles. Eyes occupy about the third distal part of the terminal joint of eyestalks. Ophthalmic scales juxtaposed, large and broad, tipped with one or two spinules. The spine on ophthalmic somite acute, entire, short.

Antennal peduncles slightly setose, longer than antennular peduncle; antennal acicles spinulose and slightly setose, shorter than the penultimate joint of antennal peduncle; antennal flagella about as

long as the carapace measured in the median line, provided with stout long bristles on the ventral side; each bristle bearing on the ventral side a series of paired setae growing out vertically.

Left cheliped twice as long as the carapace measured in the median line; the whole cheliped almost hairless except on the dorsal setose surface of merus, and somewhat glossy on surface in spite of the granulation; upper border of hand and carpus well-defined; all joints elongate; hand about twice as long as broad, index acute.

Right cheliped wanting.

Second and third pairs of legs setose, spinulose on the upper border of propodus and carpus; dactylus longer than propodus, with a longitudinal groove on the outer surface.

Note: A male specimen from Prov. Sagami is in Mr. R. Saitô's collection. The species is closely allied to *D. granulatus* Miers, from which it differs however in the ophthalmic scales being apically spinulose instead of being entire. The present species is also near to *D. brevirostris* Stimpson, but this differs from it in the carpus of left cheliped being short and of a triangular shape.

Diogenes penicillatus Stimpson.

Diogenes penicillatus, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 245; and Smiths. Misc. Coll., XLIX, 1907, p. 200.

Note: No specimen has come under my examination.

Diogenes spinifrons (de Haan).

Pagurus spinifrons, de Haan, Faun. Japon., 1849, p. 212, pl. xlix, fig. 6.

Diogenes edwardsii, Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 295.

Note: I have not been able to examine specimens which are referable to this species.

Genus *Eupagurus* Brandt.

Eupagurus, Brandt, in Middlendorf's Reise in Sibiriens, Zool., II, i, 1851, p. 105; Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 236; and Smiths. Misc. Coll., XLIX, 1907, p. 215; Miers, Cat. Crust.

N. Zealand, 1876, p. 62; Henderson, Challenger Anomura, 1888, p. 62; Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 297; and in Bronn's Thierreich, Malacostraca, p. 1145; Benedict, Proc. U. S. Nat. Mus., XV, 1892, p. 1; Milne-Edwards et Bouvier, Mem. Mus. Comp. Zool., Harvard, XIV, 3, 1893, p. 139; and Crust. Dec. "Hirondelle," Monaco, 1894, p. 73; Stebbing, Hist. Crust., 1893, p. 160; and P. Z. S., 1900, p. 534; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 122.

Bernhardus, Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 440.

Note: Under this genus I place a new species which will be designated *E. gotoi*, although the type specimen (a male) is entirely without a fourth abdominal appendage. It follows that occasional absence of that appendage should be admitted within the range of the genus.

Eupagurus angustus Stimpson.

Eupagurus angustus, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 250; and Smiths. Misc. Coll., XLIX, 1907, p. 225.

Note: No specimen has come under my examination.

Eupagurus barbatus Ortmann.

Eupagurus barbatus, Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 311.

Note: I have not been able to examine this species.

Eupagurus brachiomastus Thallwitz.

Eupagurus brachiomastus, Thallwitz, (Abh. u. Ber. Zool. Mus. Dresden, 1891, No. 3, p. 35); Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 312.

Note: No specimen has come under my examination.

Eupagurus cavimanus Miers.

Eupagurus cavimanns, Miers, P. Z. S., 1878, pp. 21, 48, pl. iii, fig. 1.

Note: This species is very closely allied to *E. gotoi*, but differs from it in having the merus of right cheliped concave instead of being convex on the dorsal surface, and in the more prominent rostrum. I have had no specimen which is referable to this species.

Eupagurus conformis (de Haan).

Pagurus conformis, de Haan, Faun. Jap., Crust., 1849, p. 206.

Eupagurus conformis, Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 305; Doflein, Abh. d. k. bayer. Akad. d. Wiss., Cl. II, Bd. XXI, Abth. iii, 1902, p. 647.

Note: No specimen has come under my examination.

Eupagurus constans Stimpson.

Eupagurus constans, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 248; and Smiths. Misc. Coll., XLIX, 1907, p. 218, pl. xxiv, fig. 3; Henderson, Challenger Anomura, 1888, p. 67, pl. vi, fig. 8; Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 310; Doflein, Abh. bayer. Akad. Wiss., XXI, iii, 1902, p. 647.

Note: Numerous specimens from Misaki and two females from the Nagasaki Prefecture in the Sci. Coll. Mus. They inhabit gastropod-shell-like colonies of *Hydractinia sodalis* Stimpson and of *H. spiralis* Goto.

In all the specimens before me, antennal acicles do not quite reach up to the level of the extremity of eyestalks, while the legs of the right side extend well beyond the tip of the larger cheliped. In these respects, the specimens may be said to stand not in exact harmony with Stimpson's description and figure of the species.

Eupagurus gotoi, n. sp.

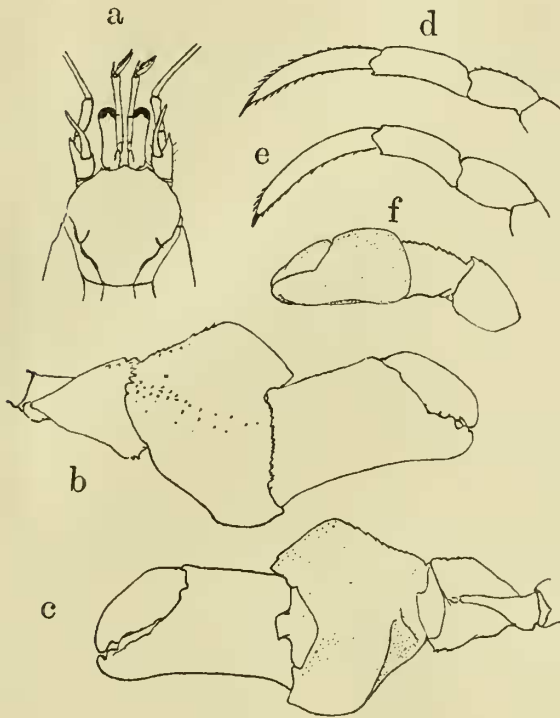
(Textfig. 2).

Almost hairless throughout entire body. Carapace depressed, broadened posteriorly, strongly calcified in the pear-shaped area in front of cervical groove, but very thin and almost transparent in the branchial region so that most of the gills can be seen through from the dorsal side of carapace.

Rostrum broadly triangular, pointed at tip, slightly carinated, projecting a very short way beyond the level of the antennal angles of carapace; the antennal angle tipped with a minute spinule.

Eyestalks moderately large, overlapping the last joint of antennular peduncles just at base, slightly curved outward; eyes scarcely

dilated, taking up about a fourth part of the terminal joint of eye-stalk; ophthalmic scales small, lanceolate, deeply concave, distant.



Textfig. 2.

Eupagurus gotoi, n. sp. Nat. size. *a*, Anterior half of carapace; *b*, outer view, *c*, inner view, of right cheliped; *d*, 2nd left leg; *e*, 3rd left leg; *f*, outer view of right cheliped.

Antennal acicle curved, slightly setose, nearly as long as the last joint of antennal peduncle and reaching beyond the level of the distal end of eye-stalk; antennal flagellum about two and a half times as long as carapace, almost nude or with but sparsely set minute setae.

Right cheliped much larger than the left, about $2\frac{3}{8}$ times the length of carapace; the merus triangular, spinulose in the distal part of the upper border, spinose along

the upper part of distal margin, the inner surface hollowed out for accommodation of the lobe of the carpus in flexion, the lower ridge spinulose; carpus very much broadened, raised into thin leaf-like ridge along both borders, spinose along the proximal half of the upper border as well as along the median line on the outer surface, finely spinulose on the outer anterior margin, deeply concave on the inner surface, the concave area kidney-shaped, the lower proximal ridge most prominent; hand about twice as long as broad, inconspicuously granulous on the upper border of palm.

Left cheliped reaches to base of right palm ; the merus spinulose along the upper border ; the carpus spinulose along both inner and upper borders ; the hand deeply concave, spade-shaped, with a thin marginal ridge, which in the basal part of the propodus covers over the articulation of the latter with the carpus and distally towards the finger-tips becomes gradually obliterated, the ridge on the movable finger running nearly in the median line of its surface.

Ambulatory legs of both sides compressed, their tip reaching beyond that of the left but not that of the right cheliped ; distinctly spinulose along the upper border of the carpus of the 2nd and 3rd right legs as well as of the 2nd left leg ; dactylus longer than propodus, with an inconspicuous longitudinal groove on both outer and inner surfaces, beset with strong bristles along its upper and lower borders.

Abdominal appendages, excepting those that form the tail-fan, are only two in number, viz., the 3rd and the 5th, both of which are unequally biramous and are situated on the left side.

Terga very thin and but little calcified, excepting those of the somites which form the tail-fan. The 4th and 5th terga have each a pair of round convex areas separated from each other by a considerable space.

Colour in spirit : biscuit yellow or brownish yellow, with spots of a paler colour on ambulatory legs, especially on their outer surface.

Ncte A male specimen (Mus. No. Cr. 335), preserved in the Imperial Museum at Uyeno, Tokyo ; it is from the Aomori Prefecture. The shape of both chelipeds is suggestive of a digging or burrowing habit. The specimen, at the time of my examining it, was smeared with mud, especially on the dorsal concave surface of the left hand. This species can be easily distinguished from the others by its characteristic chelipeds. As already stated, the species is very closely allied to *E. cavimanus*.

Eupagurus gracilipes Stimpson.

Eupagurus gracilipes, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 248 ; and Smiths. Misc. Coll., XLIX, 1907, p. 217 ; Doflein,

Abh. d. k. Akad. d. Wiss., Cl. II, Bd. XXI, Abth. III, 1902, p. 647, pl. vi, fig. 6-8.

Eupagurus levinanus, Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 302, pl. xii, fig. 13.

Note: Numerous males and females from Misaki; several from Takashima, Prov. Shiribeshi, and also from Okushiri-jima, Hokkaidô.

Eupagurus hirsutiunculus (Dana).

Bernhardus hirsutiunculus, Dana, U. S. Expl. Exp., Crust., pt. I, 1852, p. 443, pl. xxvii, fig. 3.

Eupagurus hirsutiunculus, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 250; also in Smiths. Misc. Coll., XLIX, 1907, p. 223.

Note: No specimen has come under my examination.

Eupagurus hirtimanus (White).

Pagurus hirtimanus, White, (List Crust. Brit. Mus., 1847, p. 60).

Eupagurus japonicus?, Miers, Ann. Mag. Nat. Hist., ser. 5, v, 1880, p. 375, pl. xiv, fig. 6, 7.

Eupagurus hirtimanus, de Man, Arch. f. Nat., 1887, I, p. 426; Ortmann, in Semon's Zool. Forschungsr. Crust., 1894, p. 32.

Note: I have examined a specimen from Prov. Kii; a male in Mr. M. Nakamura's collection made in the Niigata Prefecture; numerous specimens from Takashima, Prov. Shiribeshi in Hokkaido, inhabiting either gastropod shell or sponge; and a male from the Nagasaki Prefecture.

The specimens which protect their abdomen in sponge are remarkable for having the spinules on the dorsal surfaces of chelae more strongly developed than in those which inhabit gastropod shell.

Eupagurus japonicus Stimpson.

Eupagurus japonicus, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 250; and Smiths. Misc. Coll., XLIX, 1907, p. 226, pl. xxv, fig. 2; Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 309, pl. xii, fig. 16.

Eupagurus similis, Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 310; Doflein, Abh. d. k. Akad. d. Wiss., Cl. II, Bd. III, Abth. III, 1902, p. 646.

Eupagurus barbatus, Ortmann, Zool. Jahrb., Syst., VII, 1892, p. 311.

Note: Abundantly found near Misaki; also many specimens from Kominato, Prov. Awa.

Eupagurus lanuginosus (de Haan).

Pagurus lanuginosus, de Haan, Faun. Japon. Crust., 1849, p. 207; Doflein, Abh. d. k. Akad. d. Wiss., Cl. II, Bd. XXI, Abth. III, 1902, p. 646.

Note: I have not been able to examine this species.

Eupagurus lepidochirus Doflein.

Eupagurus lepidochirus, Doflein, Abh. d. k. Akad. d. Wiss., Cl. II, Bd. XXI, Abth. III, 1902, p. 623.

Note: No specimen has come under my examination.

Eupagurus megalops Stimpson.

Eupagurus megalops, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 248; also in Smiths. Misc. Coll., XLIX, p. 216, pl. xxiv, fig. 2.

E. carpofoaminatus var. *nephromma*, Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 131, pl. xi, fig. 4, 4a.

Note: To the above species which was described by Stimpson from the North China Sea I refer two male specimens contained in the Sci. Coll. Museum. They were obtained by a trawler in the Nagasaki Prefecture. Both exhibit a pin-hole-like depression on the ventral side of the carpus of each cheliped, and seem to be also referable to Alcock's *E. carpofoaminatus* var. *nephromma*, but not exactly with typical *E. carpofoaminatus* of the same author. In fact I am greatly inclined to think that the depression has escaped Stimpson's attention and that *E. carpofoaminatus* var. *nephromma* Alcock is identical with his *E. megalops*. If I am right in this assumption, it follows that Alcock's typical *E. carpofoaminatus* should be called *E. megalops* var. *carpofoaminata*, which may be distinguishable from typical *E. megalops* by having, amongst other points of difference, relatively longer dactyli to second and third pairs of legs, the dactyli being about twice (instead of about one and a half times) longer than the propodite.

The specimens in question, which were at first put into formalin but were afterwards transferred into 70% alcohol, show a faint purplish red colouration on the anterior border of carapace and on the dorsal surface of chelipeds and legs. On the legs this colour tends to occur in the form of cross-bands. On the ventral surface the chelipeds

and legs are of a nearly uniform ivory white colour. The granules and spinules on chelipeds and legs as also the entire chelae are nearly white.

***Eupagurus middendorffi* (Brandt).**

Pagurus (*Eupagurus*) *middendorffi*, Brandt, Middendorff's Sibir. Reise, Krebse, 1849, p. 32, (tab. 5, fig. 2-16).

Eupagurus middendorffi, Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 301; Doflein, Fauna Arctica, 1900, p. 646, Abh. bayer. Akad. Wiss., Cl. II, Bd. XXI, Abth. III, 1900, p. 646.

Note: No specimen has come under my examination.

***Eupagurus obtusifrons* Ortmann.**

Eupagurus obtusifrons, Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 313.

Note: This species and the following three have not come under my examination.

***Eupagurus ophthalmicus* Ortmann.**

Eupagurus ophthalmicus, Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 314.

***Eupagurus pectinatus* Stimpson.**

Eupagurus pectinatus, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 249; and Smiths. Misc. Coll., XLIX, 1907, p. 220.

***Eupagurus pilosipes* Stimpson.**

Eupagurus pilosipes, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 249; and Smiths. Misc. Coll., XLIX, 1907, p. 223.

***Eupagurus samuelis* Stimpson.**

Eupagurus samuelis, Stimpson, (Journ. Boston Soc., 1857, p. 482); Proc. Acad. Nat. Sci. Philad., 1858, p. 250; and Smiths. Misc. Coll., XLIX, 1907, p. 224; Ortmann, Zool. Jahrb. Syst., VI, 1892, p. 301; Holmes, Occas. Papers Cal. Acad. Sci., 1900, p. 144; Doflein, Abh. bayer. Akad. Wiss., Cl. II, Bd. XXI, Abth. III, 1902, p. 646.

Eupagurus dubius, Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 307, pl. xii, fig. 14; Doflein, Abh. bay. Akad. Wiss., Cl. II, Bd. XXI, Abth. III, 1902, p. 646.

Note: Very common near Misaki. In the Sci. Coll. Mus. there are several specimens from Kominato, Prov. Awa; further, two males from Idzughara, Prov. Tsushima; numerous specimens from Hosojima, Prov. Hizen; and some number of specimens from Chichi-jima, Bonin Is.

Eupagurus seriespinosus Thallwitz.

Eupagurus seriespinosus, Thallwitz, (Abh. u. Ber. Zool. Mus. Dresden, 1891, no. 3, p. 34); Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 177.

Note: No specimen has come under my examination.

Eupagurus spinimanus (Brandt).

Pagurus (*Eupagurus*) *bernhardus* var. *C. spinimana*, Brandt, Sibirische Reise, Zool., 1851, p. 108.

Pagurus (*Eupagurus*) *ochotensis*, Brandt, loc. cit.

Bernhardus armatus, Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 442, pl. xxviii, fig. 2, a-c.

Eupagurus armatus, Stimpson, (Bost. Journ. Nat. Hist., VI, 1857, p. 484).

Eupagurus ochotensis, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 248; and Smiths. Misc. Coll., XLIX, 1907, p. 218; Holmes, Occas. Papers Cal. Acad. Sci., VIII, 1900, p. 137; Benedict, Proc. U. S. Nat. Mus., 1901, p. 463.

Note: In the Sci. Coll. Mus. there are: two males from Oshika, Prov. Rikuzen; a male from off Chipesani in Saghalin; and several from Takashima, Prov. Shiribeshi in Hokkaido.

Eupagurus tricarinatus Stimpson.

Eupagurus tricarinatus, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 251; and Smiths. Misc. Coll., XLIX, 1907, p. 228.

Note: I have not been able to examine this species.

Eupagurus trigonochirus Stimpson.

Eupagurus trigonochirus, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 246; and Smiths. Misc. Coll., XLIX, 1907, p. 221, pl. xxvi, fig. 2.

Note: A male from Oshika, Prov. Rikuzen, and several specimens inhabiting the gastropod-shell-like colonies of a *Hydractinia* in the Sci. Coll. Mus. I have also found a female in Mr. M. Nakamura's collection made in the Niigata Prefecture.

Eupagurus triserratus Ortmann.

Eupagurus triserratus, Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 308, pl. xii, fig. 15.

Note: No specimen has come under my examination.

Genus *Paguristes* Dana.

Paguristes, Dana, (Proc. Acad. Nat. Sci. Philad., 1851, p. 269); and U. S. Expl. Exp., Crust., pt. 1, 1852, p. 436; Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 236; and Smiths. Misc. Coll., XLIX, 1907, p. 211; Henderson, Challenger Anomura, 1888, p. 77; Milne-Edwards et Bouvier, Mem. Mus. Comp. Zool. Harvard, XIV, 3, 1893, p. 32; Ortmann, in Bronn's Thierreich, Malacostraca, p. 1146; Benedict, Bull. U. S. Fish Comm., XX, 2, 1900, p. 143; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 30.

Paguristes acanthomerus Ortmann.

Paguristes acanthomerus, Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 279, Taf. 12, Fig. 6.

Note: The species occurs in abundance near Misaki. In all the specimens examined the right cheliped was invariably slightly more massive than the left.

Paguristes barbatus (Heller).

Clibanarius barbatus, Heller, (Verh. zool. bot. Ges. Wien, 1862, p. 524); and Novara Crust., 1865, p. 90, pl. viii, fig. 5.

Paguristes barbatus, Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 279, pl. xii, fig. 7; Doflein, Abh. bayer. Akad. Wien, Cl. II, Bd. XXI, Abth. III, 1902, p. 645.

Note: No specimen has come under my examination

Paguristes digitalis Stimpson.

Paguristes digitalis, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 247; and Smiths. Misc. Coll., XLIX, 1907, p. 212, pl. xxv, fig. 1.

Paguristes kagoshimensis, Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 281, pl. xii, fig. 8.

Note: Common in the neighbourhood of Misaki. According to Ortmann, this species should be very nearly allied to, if not identical with, *Paguristes barbatus* (Heller). As a point of marked difference between the two, it should be mentioned that, whereas *P. barbatus* possesses ten gills in all, *P. digitalis* has thirteen of them. Moreover, in the specimens which I refer to this species the dactylus of crawling legs is distinctly longer than the propodus, instead of the two joints being equally long as given for *P. barbatus*; and the abdominal appendages are slightly curved outwards in the distal parts as in *P. acanthomerus*, not straight as they should be in *P. barbatus*.

Paguristes palythophilus Ortmann.

Paguristes palythophilus, Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 277, pl. xii, fig. 5.

Note: There is in the Sci. Coll. Mus. a single male specimen from Misaki which I should refer to this species, though differing somewhat from Ortmann's description in two points, viz. (1) in the rostrum being relatively shorter and not reaching to the extremity of ophthalmic scales, and (2) in the dactyli being only slightly—instead of considerably—longer than propodi of ambulatory legs.

Paguristes seminudus Stimpson.

Paguristes seminudus, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 247; and Smiths. Misc. Coll. XLIX, 1907, p. 213.

Note: A male and two females from the Nagasaki Prefecture in Mr. R. Saitô's collection. In the former the eye-stalks are slender; in the latter which are of a smaller size, they are stouter. The spinules in the antero-lateral regions of carapace are scarcely recognizable in the females.

Genus *Pagurus* Fabricius, sensu stricto.

Pagurus (pars), Fabricius, (Ent. Syst. Suppl., 1798, p. 411); Milne-Edwards, Hist. Nat. Crust., II, 1837, p. 213; de Haan, Faun. Japon., Crust., 1849, p. 202.

Pagurus, Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 449; Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 233; and Smiths. Misc. Coll., XLIX, 1907, p. 204; Miers, Cat. Crust. N. Zealand, 1876, p. 65; Henderson, Challenger Anomura, 1888, p. 55; Ortmann, in Bronn's Thierreich, Malacostraca, p. 1146; Milne-Edwards et Bouvier, Mem. Mus. Comp. Zool. Harvard, XIV, 3, 1893, p. 161; Stebbing, Hist. Crust., 1893, p. 160; Alcock, Cal. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 78.

Dardanus, Paulson, (Red Sea Crust., 1875, p. 90); Rathbun, Proc. U. S. Nat. Mus., 1903, p. 33.

Pagurias, Benedict, Bull. U. S. Fish Comm., 1901, p. 141.

Pagurus arrosor (Herbst).

Cancer arrosor, Herbst, (Krabben, II, 1794, p. 170, pl. xliii, fig. 1).

Pagurus strigosus, Bosc, (Hist. Nat. Crust., II, 1803, p. 77, pl. xi, fig. 3).

Pagurus striatus, Latreille, (Hist. Nat. Crust. et Ins, v, 1803, p. 163); Milne-Edwards, Hist. Nat. Crust., II, p. 218; de Haan, Faun. Japon., Crust., 1849, p. 206, pl. xlix, fig. 1; Miers, Ann. Mag. Nat. Hist., ser. 5, VIII, 1881, p. 274; Studer, Abh. Ak. Berlin, 1883, p. 23; Henderson, Challenger Anomura, 1888, p. 56; Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 283; Chevreux et Bouvier, Mém. Soc. Zool. France, 1892, p. 119; Whitelegge, Mem. Austral. Mus., VI, pt. 2, 1900, p. 166.

Pagurus incisus, Olivier, (Encycl. Méth., VIII, 1811, p. 641).

Pagurus arrosor, Milne-Edwards et Bouvier, Crust. Dec. Travailleur et Talisman, pt. 1, 1900, p. 178; Moreira, Arch. Mus. Nac.,

Rio de Jan., XI, 1901, pp. 24, 85; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 168; Nobili, Ann. Sci. Nat., 9e sér., Zool., 1906, p. 121; Stebbing, Ann. S. Af. Mus., VI, pt. 1, 1908, p. 22; and VI, pt. 4, 1910, p. 350.

Note: A male from the Niigata Prefecture, in the collection of Mr. M. Nakamura; a female from Shidzuoka, Prov. Suruga, and numerous males and females from Misaki, in the Sci. Coll. Mus.

As the hermit-crab grows larger, the antennal peduncle comes to reach beyond eyestalk. Medium-sized specimens frequently still show the peduncle shorter than eyestalk. Near Misaki this species is always found in company with *Adamsia rondeletii* (Chiaje) attached to the shell inhabited by it.

Pagurus asper de Haan.

Pagurus asper, de Haan, Faun. Japon., Crust., 1849, p. 208, pl. 1, xlix, fig. 4; Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 450; Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 246; Ortmann, in Semon's Zool. Forschungen, 1894, p. 31; Borradaile, Stomatop. and Mac. Willey's Exped., 1899, pp. 396, 397, 424; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 90, pl. ix, fig. 5.

Pagurus pedunculatus, Miers, Ann. Mag. Nat. Hist., ser. 5, v, 1880, p. 374.

?*Pagurus sigmoidalis*, Zehnter, (Rev. Suisse Zool. Ann. Mus. Genève, II, 1894, p. 192, pl. viii, fig. 19 a-b).

Dardanus haani, Rathbun, Proc. U. S. Nat. Mus., XXVI, 1903 p. 34.

Note: No specimen has come under my examination.

Pagurus deformis Milne-Edwards.

Pagurus deformis, Milne-Edwards, (Ann. Sci. Nat., Zool., sér. 2, VI, 1836, p. 272, pl. xiv, fig. 2); and Hist. Nat. Crust., II, 1837, p. 222; Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 449; Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 246; and Smiths. Mic. Coll., XLIX, 1907, p. 204; Heller, Novara Crust., 1865, p. 86; de Man, Arch. f. Nat., LIII, i, 1887, p. 435; and Journ. Linn. Soc. Zool., XXII, 1888,

p. 225 ; Henderson, Challenger Anomura, 1888, p. 57 ; and Trans. Linn. Soc. Zool., v, pt. 10, 1893, p. 420 ; Ortmann, Zool. Jahrb. Syst., VI, 1892, p. 288, and in Semon's Zool. Forschungsr. Austral., 1894, p. 31 ; Borradaile, P. Z. S., 1898, p. 460 ; and Stom. and Macrura Willey's Exp., 1899, p. 424 ; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. I, 1905, p. 88, pl. ix, fig. 4 ; Nobili, Ann. Sci. Nat., 9 e sér., Zool., VI, 1906, p. 122.

Pagurus cavipes, White, (P. Z. S., 1847, p. 122).

Pagurus cultratus, White, (List Crust. Brit. Mus., 1848, p. 60).

Dardanus pedunculatus, Rathbun, Smiths. Misc. Coll., XLIX, 1907, p. 204.

Note : A specimen from Chichishima, Bonin Island, and two specimens from Okinawa, Loo choos, in the Sci. Coll. Mus.

The specimen from Chichishima has the first three abdominal appendages weakly triramous. One of the specimens from Okinawa possesses uniramous abdominal appendages ; the other is damaged in the abdominal parts. All the three specimens on hand show two pairs of sexual openings.

Pagurus diogenes Fabricius.

Pagurus diogenes, Fabricius, (Ent. Syst. Suppl., 1798, p. 412) ; de Haan, Faun. Japon., Crust., 1849, p. 208 ; Ortmann, Zool. Jahrb., Syst., VI, 1892, pp. 282, 285.

Pagurus aspersus, Berthold. (Rep. aus Neu-Grenada u. Crust. aus China, 1856, p. 21, pl. ii, fig. 1).

Note : No specimen has come under my examination.

Pagurus euopsis Dana.

Pagurus euopsis, Dana, (Proc. Acad. Nat. Sci. Philad., 1852, p. 7) ; and U. S. Expl. Exp., Crust., pt. 1, p. 452, pl. xxviii, fig. 6a-c ; de Man, Arch. f. Nat., LIII, 1887, p. 429 ; Henderson, Challenger Anomura, 1888, p. 58 ; Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 286 ; and in Semon's Forschungsr. Austral., 1894, p. 30 ; Borradaile, P. Z. S., 1898, p. 461 ; and Stom. and Mac. Willey's Exp., 1899, pp. 396,

425; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 86, pl. ix, fig. 2.

Pagurus depressus, Heller, SB. k. Akad. Wien, XLIV, 1861, p. 248; Hilgendorf, MB. k. Akad. Berlin, 1878, p. 814; de Man, Arch. f. Nat., LIII, i, 1887, p. 431.

Note: A female specimen from Nakanoshima, Kagoshima Prefecture, is in the College of Agriculture and Forestry in Kagoshima. Another female specimen from Okinawa in the 7th High School. The two above specimens agree well with each other in shape, and undoubtedly represent typical *P. euopsis*.

Pagurus impressus de Haan.

Pagurus impressus, de Haan, Faun. Japon., Crust., 1849, p. 207, tab. XLIX, fig. 3.

Dardanus impressus, Rathbun, Proc. U. S. Nat. Mus., XXIII, 1902, p. 34.

Note: Five males from Yenoura, Prov. Suruga; and several specimens from the Nagasaki Prefecture in the Sci. Coll. Mus. Tufts of setae sparsely present in scattered distribution on the outer surface of left chela, in spite of de Haan's qualifying it "glaberrimo."

Pagurus megistos (Herbst).

Cancer megistos, Herbst, (Krabben, III, 1804, p. 23, pl. xi, fig. 1).

Pagurus megistos, Olivier, (Encycl. Méth., VIII, 1811, p. 639).

Pagurus punctulatus, Olivier, (Encycl. Méth., VIII, 1811, p. 641); Milne-Edwards, Hist. Crust., II, 1837, p. 222; Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 451, pl. xxviii, fig. 4a-b; Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 246; and Smiths. Misc. Coll., XLIX, 1907, p. 205; Heller, Novara Crust., 1865, p. 87; Hilgendorf, in v. d. Decken's Reisen in Ost-Afr., III, i, 1869, p. 95; Miers, P. Z. S., 1877, p. 138; Ann. Mag. Nat. Hist., sér. 5, v. 1880, p. 374; and Voy. H. M. S. Alert, 1884, pp. 519, 555; de Man, Arch. f. Nat., LIII, i, 1887, p. 429; and Journ. Linn. Soc., Zool., XXII, 1888, p. 225; Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 285; and in Semon's Zool. Forschungsr. Austral., Crust., 1894, p. 30; Henderson, Trans. Linn. Soc. Zool., v, 1893, p. 419; Borradaile, P. Z. S., 1898, p. 461, and Stom. and Mac.

Wiley's Exp., 1899, p. 425; Lanchester, P. Z. S., 1902, p. 364; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 81, pl. viii, fig. 1.

Dardanus punctulatus, Rathbun, Proc. U. S. Nat. Mus., XXVI, 1902, p. 34.

Dardanus megistos, Rathbun, Smiths. Misc. Coll., XLIX, 1907, p. 205.

Pagurus megistos, Stebbing, Ann. S. Afr. Mus., VI, pt. iv, 1910, p. 350.

Note: Three males, one each from Bonin Islands, Yayeyama (Loo-choo Is.) and Iriomotejima (Loo-choo Is.) in the Sci. Coll. Mus.

As in some other species, the right eyestalk is frequently somewhat shorter than the left, the difference being sometimes so slight as to be scarcely noticeable. The larger specimen from the Loo-choos has the inner border of ischium of the left cheliped not crested but provided with a row of tubercles, varying in shape gradationally from the simply rounded of those proximally situated to the somewhat pointed and dome-like of the distalmost tubercle.

Pagurus platythorax Stimpson.

Pagurus platythorax, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 246; and Smiths. Misc. Coll., XLIX, 1907, p. 206.

Note: A female from Nago Bay (Okinawa, Loo-choos) and another female from near Kisezaki in the same island are in the collection of the 7th High School in Kagoshima. Three triramous abdominal appendages present, in which the outer ramus is apically broadened and the middle ramus is the slendermost of all.

Pagurus setifer Milne-Edward.

Pagurus setifer, Milne-Edwards, (Ann. Sci. Nat., Zool., 2e sér., VI, 1836, p. 274); and Hist. Nat. Crust., II, 1837, p. 225; de Haan, Faun. Japon., Crust., 1849, p. 209; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 83, pl. viii, fig. 3. *Vide etiam* de Man, Abh. Senckenb. Nat. Ges., XXV, 1902, p. 739.

Pagurus sculptipes, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 246; and Smiths. Misc. Coll., XLIX, 1907, p. 205.

Pagurus pavementatus, Hilgendorf, (MB. k. Akad. Berlin, 1878, p. 816, pl. iii, fig. 1-5).

Dardanus sculptipes, Rathbun, Proc. U. S. Nat. Mus., XXVI, 1902, p. 34.

Note: Abundant near Misaki. Larger specimens of the species agree with *P. megistos* in proportions of some parts, f. i., the eyestalk is larger than the antennular peduncle, and the greatest breadth of the propodite of third left leg is equal to about two-fifths of the length of same.

Pagurus vulnerans Thallwitz.

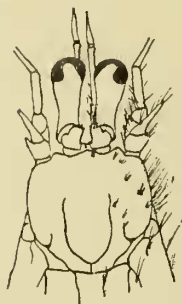
Pagurus vulnerans, Thallwitz, (Abh. u. Ber. K. Zool. Mus. Dresden, 1890-91, no. 3, p. 33); Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 83.

Note: A single male from Wakayama, Prov. Kii, is in the Sci. Coll. Mus. In addition to all the characters pointed out by Alcock, this specimen shows the following points: (1) Eye takes up a third part of the terminal joint of eyestalk; (2) eyestalk distinctly broadened distally; (3) the greatest breadth of carapace across the branchial region is equal to about eight-tenths of the length of same in the median line; and (4) the U-shaped suture line in front of the cervical groove is somewhat divergent anteriorly.

Pagurus watasei, n. sp.

(Textfig. 3).

Carapace little depressed, its greatest breadth across branchial region equal to about seven-eighths the length in the median line; with tufts of bristles in the proximity of anterior and antero-lateral borders. The U-shaped suture-line in front of cervical groove somewhat closing anteriorly, instead of diverging.



Textfig. 3.

Pagurus watasei, n. sp.
Natural size.

Eyestalks depressed, broadened distally, shorter than anterior border of carapace, longer than antennal but shorter than antennular peduncles. The corneal area takes up nearly a third part of the terminal joint of eyestalk. Ophthalmic scales setose and spinulose at apex, widely separated from each other.

Antennal acicles setose and slightly spinulose,

reaching to the end of the proximal third of the last joint of antennal peduncle.

Chelipeds and ambulatory legs thickly beset with thorn-like spines and tufts of bristles, especially in the last three joints and on extensor surfaces; with stronger tooth-like spines along the crest-like inner border of merus and moderately strong spines along the upper inner border of carpus and of the palm of left cheliped.

Left cheliped much larger than the right, its length equal to about seven-eighths that of carapace; lower border of palm with a well-defined series of tubercles.

Ambulatory legs compressed, those of the left side reaching beyond cheliped of the same side; those of the right side even longer.

Abdominal appendages well-developed in the female. Abdominal spur present.

Colour.—In spirit yellowish but reddish towards tip of legs; numerous minute spots of a reddish colour scattered on carapace, legs, and abdominal terga; eyestalks with a broad purplish cross-band; bristles yellowish. Formalin specimens show punctulation of a darker colour; bristles reddish or brownish red and mostly yellowish distally.

Note: The type specimen is a female from Kome-no-tsu, Prov. Satsuma. It is preserved in the Sci. Coll. Mus. Carapace length 32 mm. Further, there are in the same collection two males, one from Prov. Kii and the other from the Nagasaki Prefecture; a female from Tempôzan, Prov. Satsuma, in the collection of the Kagoshima II. Middle School; a male in Mr. R. Saitô's collection; and finally, a male in the collection of the Tokyo Higher Normal School.

This species is closely allied to *Pagurus megistos* (Herbst), but differs from it in the shorter eyestalks, in the punctulation being of a reddish instead of a whitish colour, and in the convergently U-shaped suture-line in front of cervical groove. This species is also very near to *P. diogenes* Fabricius but is distinguishable by the left chela being not so much shortened as in the latter species.

Pagurus wood-masoni Alcock.

Pagurus wood-masoni, Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 85, pl. ix, fig. 3.

Note: A male specimen from Nago Bay, Okinawa (Loo-choos) in the collection of the 7th High School, Kagoshima. Contrary to Alcock's description, the lower border of hand of the larger cheliped is not serrated, but is occupied by black spinules and tubercles which are densest along that border. Bristles are of a brownish carmine colour; crossbands absent.

Genus *Parapagurus* Smith, sensu extenso.

Parapagurus, Smith, Trans. Connect. Acad. v, 1879, p. 50; and Bull. Mus. Comp. Zool. Harvard, x, 1882, p. 20; Henderson, Challenger Anomura, 1888, p. 85; Milne-Edward et Bouvier, Mem. Mus. Comp. Zool. Harvard, XIV, no. 3, 1893, p. 26; and Hironnelle Crust., Brachyures et Anomures, Monaco, 1894, p. 63; Stebbing, Hist. Crust., 1893, p. 166; Holmes, Synop. Calif. Stalk-eyed Crust., 1900, p. 55; Alcock, Cat. Ind. Deep-Sea Crust., 1901, p. 216; and Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 98.

Sympagurus, Smith, Proc. U. S. Nat. Mus., VI, 1883, p. 37; Henderson, Challenger Anomura, 1888, p. 52; Milne-Edwards et Bouvier, Mem. Mus. Comp. Zool. Harvard, XIV, no. 3, 1893, p. 58; and Bull. Soc. Zool. France, XXII, 1897, p. 131; and Crust. Déc. Hironnelle et Princesse-Alice, Monaco, 1899, pp. 55, 56; Stebbing, Hist. Crust., 1893, p. 166; Ortmann, in Bronn's Thierreich, Malacostraca, p. 1145; Alcock, Cat. Ind. Deep-Sea Crust., 1901, p. 203; and Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 103.

Note: Smith separated *Sympagurus* from *Parapagurus* merely on the ground that while in the former the arrangement of gill-plates is biserial in the latter it is quadriserial. However, this distinction can not always be carried out with exactness, since in *Sympagurus nudus* Milne-Edwards it is known that some gills have the plates quadriserially arranged, though those forming the outer series on both sides are rudimentary. The new species, which will soon be described under the name of *Parapagurus iijimai*, is another example in which the gill-plates are in a way intermediate between being biserial and quadriserial, in that the biserial gill-plates are each bifid at the distal end. Under these circumstances it seems to me advisable to reunite the two genera.

Parapagurus diogenes (Whitelegge).

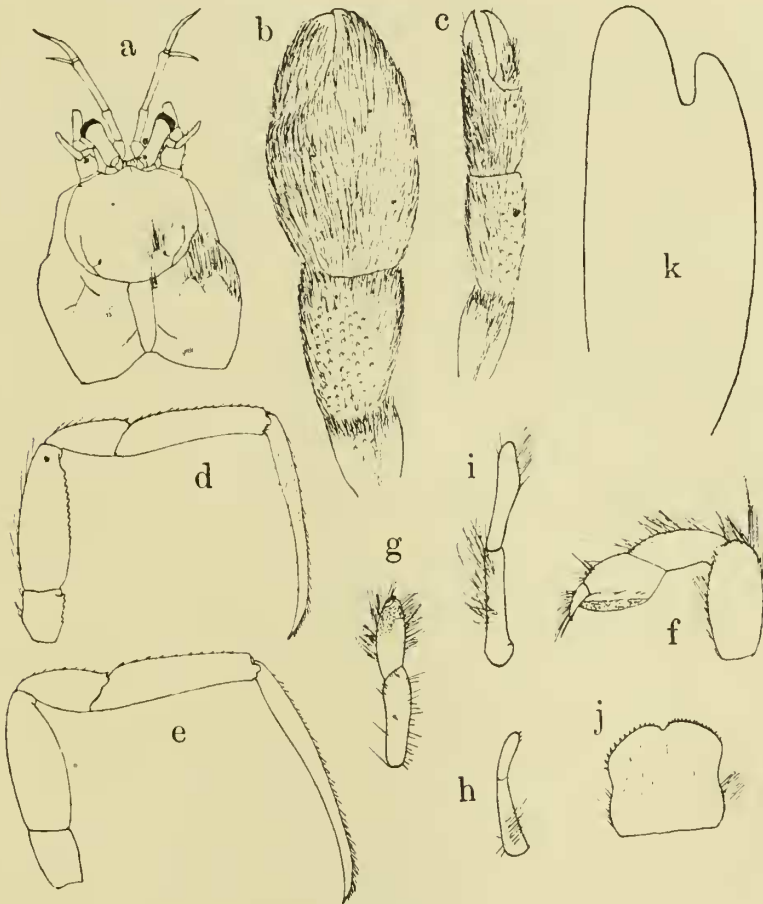
Sympagurus diogenes, Whitelegge, Mem. Aust. Mus., IV, pt. 2, 1900, p. 172, pl. xxxiv, fig. 3.

Note: A single female from Prov. Kii in the Sci. Coll. Mus., showing some insignificant points of disagreement from Whitelegge's description.

Parapagurus iijimai, n. sp.

(Textfig. 4).

Carapace as long as broad, with tufts of long, anteriorly directed setae distributed mainly in the middle transverse zone. The



Textfig. 4.

Parapagurus iijimai, n. sp. a, carapace; b, right cheliped; c, left cheliped; d, 2nd right leg; e, 3rd right legs; f, 4th left leg; g, 5th left leg; h, 1st right abdominal appendage; i, 2nd right abdominal appendage; j, telson; k, gill-plate; a-e, $\times \frac{1}{4}$; f, g, $\times 2$; h-j, $\times 3$; k, $\times 25$.

well-calcified portion in front of the cervical groove is broader than long, its length in the median line being equal to about eight-ninths of the greatest breadth. Rostrum broad but not rounded off, slightly prominent, weakly carinated. Left antero-lateral angle tipped with a small tooth, which is absent on the right.

Eyestalks slightly setose dorsally, broadened distally and slightly inflated at base, half as long as the front border of carapace, reaching far beyond the first joint of antennular peduncle and the penultimate joint of antennal peduncle. Eyes large; ophthalmic scales simple, acute.

Antennular peduncles slightly compressed, as long as the anterior border of carapace, the terminal joint shorter than half their total length; upper flagellum nearly as long as the terminal joint.

Antennal peduncles stout, reaching a short way beyond the end of the second joint of antennular peduncle; acicles long, reaching to the middle of the terminal joint of antennal peduncle, curved, setose, faintly serrulate along the inner edge; flagellum wanting.

Right cheliped much larger than the left, nearly three times as long as carapace, more or less copiously covered all over with long soft hairs, which are densest on merus and upper surface of chela; chela ovato-lanceolate, all other joints elongate; carpus as long as palm and longer than merus; dactylus slightly shorter than palm; upper and lower borders of palm granulous.

The slender left cheliped reaches almost to base of dactylus of the right cheliped; all joints covered with long soft hairs; merus as long as carpus and longer than palm; dactylus longer than palm; with about twenty irregularly disposed granules on the upper border of carpus and a few sparsely set granules on the lower border of palm; under surface of merus and ischium granulous.

Second and third pairs of legs compressed, with a tiny spinule at the distal end of the anterior border of carpus. Merus of the second pair of legs has the lower border well-defined; ischium with a number of granules on the lower border.

Gill-plates biserial, each plate bifid at tip, broad.

Colour in spirit greenish; eyestalks whitish. The peculiar greenish colour of the body is probably due to the verdigris which was produced by the brass-wire used to keep together the broken feet. The alcohol in which the specimen has been preserved also shows a faintly greenish colour.

Note: This new species is based on a male specimen in the S. C. Mus.; it is labelled Okinose, Sagami Sea; 290 fathoms; May 5th, 1899, Kuma coll. The species is closely allied to *P. pilosimanus*, but differs from this in the much broader shape of the eyestalk. It is also near to *P. bouvieri*, but is distinguishable by the pleopods being apically not so much broadened as in the latter species.

Parapagurus pilosimanus Smith.

Parapagurus pilosimanus, Smith, Trans. Connect. Acad., v, 1879, p. 51; and Proc. U. S. Nat. Mus., vi, 1883, p. 33, pl. v, fig. 3-5, and pl. vi, fig. 1-4a; and Bull. Mus. Comp. Zool. Harvard, x, 1882, p. 20, pl. ii, fig. 4; Milne-Edwards et Bouvier, Mem. Mus. Comp. Zool., xvi, no. 3, 1893, p. 28; and Crust. Décap. Travailleur et Talisman, pt. 1, 1900, p. 187, pl. vi, fig. 2, and pl. xxiv, fig. 1-3; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 99, pl. x, fig. 1.

Eupagurus jacobii, Milne-Edwards, Bull. Mus. Comp. Zool., viii, 1880, p. 42.

Parapagurus abyssorum, Henderson, Challenger Anomura, 1888, p. 87, pl. ix, fig. 2; Wood-Mason, Ann. Mag. Nat. Hist., 1891, p. 199; Milne-Edwards et Bouvier, Crust. Decap. Travailler et Talisman, pt. 1, 1900, p. 191, pl. xxiv, fig. 4-6.

Note: No specimen has come under my examination.

Genus *Spiropagurus* Stimpson.

Spiropagurus, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858 p. 236; and Smiths. Misc. Coll., XLIX, 1907, p. 214; Henderson, Challenger Anomura, 1888, p. 71; Milne-Edwards et Bouvier, Mem. Mus. Comp. Zool. Harvard, xiv, No. 3, 1893, p. 110; Stebbing, Hist.

Crust., 1893, p. 165; Ortmann, in Bronn's Thierreich, Malacostraca, p. 1145; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 117.

Spiropagurus spiriger (de Hann).

Pagurus spiriger, de Haan, Faun. Japon., Crust., 1849, p. 206, pl. xlix, fig. 2.

Spiropagurus spiriger, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 248; and Smiths. Misc. Coll., XLIX, 1907, p. 214; Henderson, Challenger Anomura, 1888, p. 72; and Trans. Linn. Soc., Zool., v, 1893, p. 425; Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 297; Lanchester, P. Z. S., 1902, II, p. 364; Rathbun, Proc. U. S. Nat. Mus., XXVI, 1902, p. 37; Alcock, Cat. Ind. Dec. Crust., 2, fasc. 1, 1905, p. 118, pl. xiii, fig. 1.

Note: A male from Wakayama, Prov. Kii, and many specimens from the Nagasaki Prefecture in the Sci. Coll. Mus.

Family **Coenobitidae** Dana.

Canobitidæ, Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, pp. 432, 435; Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 232; Henderson, Challenger Anomura, 1888, p. 49; Stebbing, Hist. Crust., 1893, p. 155; Ortmann, in Bronn's Thierreich, Malacostraca, p. 1146; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 138.

Genus *Birgus* Leach.

Birgus, Leach, (Trans. Linn. Soc., XI, 1815, p. 337); Milne-Edwards, Hist. Nat. Crust., II, 1837, p. 244; de Hann, Faun. Japon., Crust., 1849, p. 203; Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 435; Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 232; Henderson, Challenger Anomura, 1888, p. 49; Stebbing, Hist. Crust., 1893, p. 156; Ortmann, in Bronn's Thierreich, Malacostraca, p. 1147; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 148.

Birgus latro (Linné).

Cancer latro, Linné, Syst. Nat., ed. 12, II, 1767, p. 1049.

Birgus latro, Leach, (Trans. Linn. Soc. XI, 1815, p. 337); Milne-Edwards, Hist. Nat. Crust., II, 1837, p. 246; de Haan, Faun. Japon., Crust., 1849, p. 212; Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 474, pl. xxx, fig. 5; Hilgendorf, in v. d. Decken's Reisen Ost-Afr., III, i, 1869, p. 100; Brocchi, Ann. Sci. Nat., Zool., 6e sér., II, 1875, Art. 2, p. 39, pl. xv, fig. 44; Suhm, Zeits. f. wiss. Zool., XXVI, 1875, p. 73; Semper, Zeits. f. wiss. Zool., XXX, 1878, p. 282; Miers, Zool. "Alert," 1884, p. 555; Bourne, P. Z. S., 1886, p. 334; Henderson, Challenger Anomura, 1888, p. 50; de Man, Arch. f. Nat., LIII, i, 1887, p. 453; and Abh. Senck. Ges., 1902, p. 751; Tashiro, Zool. Mag., I, 1889, p. 76 (in Japanese), pl. iii; Ortmann, Zool. Jahrb., Sys., VI, 1892, p. 319; and in Bronn's Thierreich, Malacostraca, p. 1235; Stebbing, Hist. Crust., 1893, p. 156; Whitelegge, Mem. Austral. Mus., III, 1897, p. 140; Borradaile, P. Z. S., 1898, p. 458; and 1899, p. 937; and Stom. and Mac. Willey's Exp., 1899, pp. 397, 426; and 1900, pp. 585-590; Alcock, Cat. Ind. Dec. Crust., 2, fasc. 1, 1905, p. 150, pl. xvi.

Birgus laticauda, Latreille, (Desmarest Dict. Sci. Nat., XXVIII, 1823, p. 290).

Note: A female from Yayeyama, Loo-choos, in the Sci. Coll. Mus.

Genus *Cænobita* Latreille.

Cænobita, Latreille, (Fam. Nat. du Règne Anim., 1826, p. 276); Milne-Edwards, Hist. Nat. Crust., II, 1837, p. 238; de Haan, Faun. Japon., Crust., 1849, p. 203; Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 435; Stimpson, Proc. Acad., Nat. Sci. Philad., 1858, p. 232; Hilgendorf, in v. d. Decken's Reisen Ost-Afr., Crust., III, i, 1869, p. 97; Henderson, Challenger Anomura, 1888, p. 50; Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 315; and in Bronn's Thierreich, Malacos-

traca, p. 1146; Stebbing, Hist. Crust., 1893, p. 159; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 139.

Cænobita cavipes Stimpson.

Cænobita cavipes, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 245; and Smiths. Misc. Coll., XLIX, 1907, p. 200; de Man, Abh. Senckenb. Nat. Ges., XXIV, 1902, p. 743, pl. xxiv, fig. 46; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 146, pl. xiv, fig. 1.

C. violascens, Heller, (Verh. zool. bot. Ges. Wien, XII, 1862, p. 524); and Novara Crust., 1865, p. 82, pl. viii, fig. 1; Hilgendorf, in v. d. Decken's Reisen Ost-Afr., III, i, 1869, p. 99, pl. vi, fig. 3b; de Man, Arch. f. Nat., LIII, 1887, i, p. 453; and Journ. Linn. Soc. Zool., XXII, 1888, p. 255.

C. compressa, Miers, Ann. Mag. Nat. Hist., ser. 5, v, 1880, p. 371.

C. compressus, Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 318, pl. xii, fig. 23; Henderson, Trans. Linn. Soc., Zool., v, 1893, p. 410; Borradaile, Stomatop. and Macr. Willey's Exp., 1899, pp. 396, 397, 198, 425; Lanchester, P. Z. S., 1902, II, p. 368.

Note: This species may be only a varietal form of *C. rugosus*. But no specimen on hand stands quite in harmony with Stimpson's description of that species. Therefore, it had better be placed distinct from it until a larger supply of materials makes possible a thorough revision of these Coenobite forms.

Cænobita hilgendorfi, n. nom.

Cænobita clypeata, Latreille, (Fam. Nat. Règne Anim., 1826, p. 277); Milne-Edwards, Hist. Nat. Crust., II, 1837, p. 239; Dana, U. S. Expl. Exp. Crust., pt. 1, 1852, p. 473, pl. xxx, fig. 4; Heller, Novara Crust., 1865, p. 82; Miers, Ann. Mag. Nat., ser. 5, v, 1880, p. 371; Henderson, Challenger Anomura, 1888, p. 51.

C. clypeatus, Hilgendorf, in v. d. Decken's Reisen in Ost-Afr., III, i, 1869, p. 98, pl. vi, fig. 3c, 4a; de Man, Arch. f. Nat., LIII, i, 1887, p. 452; and Abh. Senckenb. Nat. Ges., XXV, 1902, p. 741,

pl. xxiv, fig. 44; Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 316, pl. xii, fig. 20; Borradaile, P. Z. S., 1898, p. 459; and Stom. and Mac. Willey's Exp., 1899, p. 425; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 142, pl. xv, fig. 1, 1a.

Note: Five males and six females from Botel Tobago Island, Formosa, preserved in the Sci. Coll. Mus.

On Hilgendorf's authority (l. c.), we learn that *Cancer clypeatus* Herbst (1794) is not identical with Latreille's *Cænobita clypeata* (1826) but is the same as *Cænobita diogenes* M.-Edw. (1837). It then follows that the proper designation for the last mentioned species should be *Cænobita clypeatus* (Herbst). Since, now, this *C. clypeatus* (Herbst) is clearly a species distinct from *C. clypeata* Latr., the latter must receive a new specific name. Consequently I have proposed to call it *Cænobita hilgendorfi*.

Cænobita rugosus Milne-Edwards.

Cænobita rugosa, Milne-Edwards, Hist. Nat. Crust., II, 1837, p. 241; Krauss, Südafr. Crust., 1843, p. 212; Dana, U. S. Expl. Exp., Crust., pt. 1, 1852, p. 471, pl. xxx, fig. 1; Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 245; and Smiths. Misc. Coll., XLIX, 1907, p. 199; Heller, Novara Crust., 1865, p. 82; Henderson, Challenger Anomura, 1888, p. 51; and Trans. Linn. Soc., Zool., v, 1893, p. 410.

C. rugosus, Hilgendorf, in v. d. Decken's Reisen Ost-Afr., III, i, 1869, p. 99, pl. vi, fig. 2, 3a, 4b; Miers, Ann. Mag. Nat. Hist., ser. 5, II, 1878, p. 410; de Man, Arch. f. Nat., LIII, i, 1887, p. 452; Ortmann, Zool. Jahrb., Syst., VI, 1892, p. 317, pl. xii, fig. 22; Borradaile, P. Z. S., 1898, p. 460; and Stom. and Mac. Willey's Exp., pp. 397, 425; Lanchester, P. Z. S. 1902, II, p. 368; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 143, pl. xiv, fig. 3, 3a.

C. compressa var. *rugosa*, Bouvier, $\frac{2}{2}$ (Bull. Soc. Philom., 8e sér., III, 1890-91, p. 21).

C. clypeata, Owen, (Zool. "Blossom," Crust., 1839, p. 85, pl. xxv, fig. 3).

C. compressus, de Man, Abh. Senckenb. Nat. Ges., xxv, 1902, p. 742, pl. xxiv, fig. 45.

C. purpurea, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 245; and Smiths. Misc. Coll., XLIX, 1907, p. 198.

Note: In the Sci. Coll. Mus. there are of this species: a male from Ōshima, Prov. Idzu, and several specimens from Bonin Islands, Loo-choos, and from Tansui in Formosa. A male specimen exists also in Mr. M. Nakamura's collection made in the Niigata Prefecture but there is ground to assume that the specimen was not captured at that locality, but was brought over from a warmer region. The presence or absence of an oblique file on the outer surface of left chela can not be much relied upon as an important specific character, for I find that in some individuals it is not at all or but so very little developed as to be scarcely distinguishable as such. The outer surface of the propodus and dactylus of the third left leg is sometimes simply rounded; in other cases it shows a longitudinal edge which is generally ill-defined but may sometimes be sharply defined. The coxal elongation of the fifth pair of legs is in no case so elongate as has been figured by authors (f. i., by Alcock, op. cit., pl. xiv, fig. 2a), and that even in those individuals which come close to *C. perlatus*. Although the material at my disposal does not suffice to form a complete connecting series between *C. rugosus* and *C. perlatus*, yet I am greatly inclined to think from a consideration of the above mentioned facts that some day it may become necessary to unite these species into one.

Family **Pylochelidae** Spence Bate.

Pylochelidae, Spence Bate, Challenger Macrura, 1888, p. 11; Ortmann, in Bronn's Thierreich, Malacostraca, p. 1144; Alcock, Investigator Mac. and Anom., 1899, p. 209; and Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 13.

Genus **Pomatocheles** Miers.

Pomatocheles, Miers, P. Z. S., 1879, p. 49; Alcock, Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 14.

Pomatocheles jeffreysii Miers.

Pomatocheles jeffreysii, Miers, P. Z. S., 1879, p. 49, pl. iii, fig. 2.

Note: Three females with eggs from Misaki in the Sci. Coll. Mus.

Genus **Pylocheles** Milne-Edwards.

Pylocheles, Milne-Edwards, Bull. Mus. Comp. Zool. Harvard, VIII, 1880, p. 38; Milne-Edwards et Souvier, Mem. Mus. Comp. Zool. Harvard, XIV, no. 3, 1893, p. 17; Stebbing, Hist. Crust., 1893,

p. 169; Ortmann, in Bronn's Thierreich, Malacostraca, p. 1144; Alcock, Investigator Mac. and Anom., 1899, p. 209; also in Cat. Ind. Dec. Crust., pt. 2, fasc. 1, 1905, p. 14.

***Pylocheles spinosus* Henderson.**

Pyloches spinosus, Henderson, Challenger Anomura, 1888, p. 101, pl. xi, fig. 1; Ortmann, Zool. Jahrb., Syst, VI, 1892, p. 274.

Note: No specimen has come under my examination.

Postscriptum.

The following species should be added to the above catalogue, though I have not been able to examine it myself.

***Eupagurus ortmanni* Balss.**

Eupagurus ortmanni, Balss, Zool. Anz., Bd. XXXVIII, 1911, p. 7.
